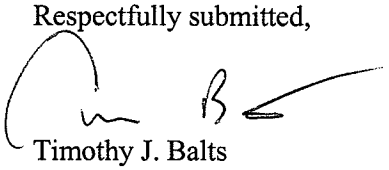
PRE-APPEAL BRIEF REQUEST FOR REVIEW (filed with the Notice of Appeal)	Docket Number 033047/240187
Application Number 10/003,574	Filed October 24, 2001
First Named Inventor Hannu Kuoska	
Art Unit 1754	Examiner Stuart Hendrickson

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

Respectfully submitted,



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Attachment
Reasons for Requesting Pre-Appeal Brief Request For Review

Independent Claims 1 and 26 are patentable over the combination of U.S. Patent No. 5,213,663 to Musow, WO 98/10137 to Baines, and Applicants' alleged admissions.

In the production of pulp, the Kraft recovery process is widely used to recover chemicals, such as NaOH, from the black liquor, which is a byproduct of the pulping process. The recovery is a multi-step process in which the black liquor is combusted to produce smelt. The smelt is then dissolved in a dissolving tank to form a green liquor, which is subsequently fed into a slaker where it is reacted with lime in a causticizing reaction to convert Na_2CO_3 into NaOH. The resulting mixture is clarified to remove the liquid phase, also referred to as the white liquor, from the solid phase. The white liquor can then be recycled to use in pulp digestion as the beginning of the process.

The invention defined in independent Claim 1 is directed to a method of controlling a causticization process by controlling the density of the green liquor that is being fed into the slaker. In the claimed process, the density of the green liquor entering the slaker is controlled by adding a controlled amount of white liquor so that the density of the green liquor is adjusted towards a set value. The set value for the green liquor is determined in a multi-step process in which a target value for the total titratable alkali (TTA) in the green liquor is determined, the TTA of the green liquor is measured, and a model is provided that relates green liquor density to TTA. The model is then used to calculate the set value for the green liquor density based on the measured TTA and the target value for the TTA. The density of the green liquor is measured before it is fed into the slaker. The set value for the green liquor density and the measured density of the green liquor are used to control the amount of white liquor added to the green liquor. The process steps recited in Claim 1 provide greater control over the causticizing process, which in turn results in greater amounts of NaOH being recovered from the black liquor.

Independent Claims 1 and 26 have been rejected under 35. U.S.C. § 103(a) as being unpatentable over the combination of Baines, Musow, and the alleged admissions on page 5 of the instant specification.

Musow describes a process wherein the causticization process is controlled by adjusting the amount of weak wash solution that is added to the dissolving tank so that the concentration of sodium carbonate in the green liquor is maintained at a pre-determined level. See column 2, lines 27 – 33. Musow further teaches that the sodium carbonate concentration is determined by measuring the conductivity of the green liquor. Thus, Musow teaches controlling the causticization process by

maintaining the level of sodium carbonate at a predetermined level, and that the concentration of sodium carbonate may be controlled by adjusting the amount weak wash added to the dissolving tank before the green liquor is even formed. Musow further states that measurements such as green liquor density and TTA are indirect and less accurate than conductivity measurements. See column 2, lines 59 – 63.

Baines is directed to a method of controlling the causticizing process by controlling the amount of lime that is introduced into the slaker. See column 5, lines 50-51. For example, Baines states that the "introduction of lime, CaO, to the slaker is the critical point of control." See column 5, lines 48-49. Baines teaches that the amount of lime that is to be added to the Slaker may be determined by measuring concentrations of the primary constituents of the green liquor and the white liquor: carbonate, hydroxide, and sulfide. These components are individually measured to provide the control system with a complete characterization of the reagents participating in the causticizing reaction so that each individual component may be accounted for by the control system. See column 3, lines 9-15. Baines also describes that the control system may monitor ambient measurements, such as pH, flow rate, density of the liquor as it is processed through the slaker, and that these ambient measurements are not critical to the invention. See column 5, lines 55-65. Notably, Baines states that the density of the liquor is measured as it is processed through the slaker. Once in the slaker, the green liquor reacts with lime to undergo causticization reaction and is no longer considered green liquor.

Baines further states that measurement of the relative concentrations of the individual liquor components is critical to the invention, as opposed to a measurement of a characteristic of the total liquor. See column 6, lines 10-13. However, the claimed invention controls the causticizing reaction by measuring the density of the green liquor and measuring the total titratable alkali in the green liquor to calculate the amount of weak white liquor that is to be added to the green liquor. Indeed, Baines actually teaches away from using a measurement such as total total titratable alkali (TTA) because "a measurement of a single characteristic of the entire white or green liquor, as taught by Bertelsen, can result in error...." See column 2, lines 27-29.

The Examiner alleges that the Applicant admits that FI Patent No. 66,662 teaches the measurement of green density and control of white liquor infeed. The Examiner's characterization is incorrect. U.S. Patent No. 4,236,960, which is the equivalent of FI Patent No. 66,662, teaches controlling the causticization reaction by the adjusting the amount of lime added to the slaker. For example, the '960 patent states '[o]ne then seeks to adjust the amount of lime (CaO) added to the

slaker 19 in such a way to keep K_1, the degree of causticization, constant and as high as possible...." See column 3, lines 7 – 10. Contrary to the Examiner's assertions, FI Patent No. 66,662 clearly does not teach controlling density of the green liquor by the addition of white liquor, and Applicants' statement on page 5 of the specification clearly does not admit such.

A. The references do not disclose or suggest each and every limitation of Claims 1 & 26

In order to establish a *prima facie* case of obviousness, the reference(s) must teach or suggest each and every claim limitations. The Examiner has failed to meet this burden for several reasons.

The combination of Musow, Baines, and Applicants' alleged admissions fail to disclose or suggest each and every limitation of Claim 1. In particular, the combination of the references fail to teach at least the following elements: 1) measuring the total titratable alkali (TTA) and density of the green liquor to be used in combination with a model that correlates green liquor density to the measured TTA; 2) utilizing the model and the measured TTA to calculate a set-value for the density of the green liquor; and 3) adjusting the density of the green liquor to the set-value by adding weak white liquor into the green liquor before it is fed into the slaker.

As discussed above, Musow teaches adding weak wash solution to the dissolving tank. Baines and Applicants' alleged admissions teach that the causticization reaction is controlled by adding lime to the slaker; they do not teach the addition of white liquor to the green liquor. The processes described in the cited references are completely different than the claimed process in which white liquor is added to the green liquor. Further, the cited references do not disclose or suggest using a model that relates TTA to green liquor density for calculating a set value of the green liquor density. The Examiner has failed to disclose where these elements can be found in the cited references. The Examiner attempts to compensate for these deficiencies by making broad statements that the differences between the references and claims is which variables are monitored without every providing analysis of how the cited references disclose or suggest the recited elements. Such unsupported conclusionary statements cannot support an obviousness rejection. As noted above, to establish a *prima facie* case of obviousness each and every limitation must be found either expressly or inherently in the references. The Examiner has failed to meet this burden.

Independent Claim 26 is directed to a process for controlling the causticizing reaction in which the set value for the green liquor density is determine utilizing an equation that utilizes variables for TTA of the green liquor, a constant angular coefficient "kk", and an offset "os" that is determined from a model having parameters for the green liquor TTA and the momentary density of the green liquor.

As in the rejection of Claim 1 discussed above, the cited references fail to disclose several elements of Claim 26 including the step of utilizing a model for determining green liquor density. Further, none of the references disclose or suggest the equation recited in Claim 26, and the Examiner has failed to show where the equation and its various variables can be found in the references. None of the cited references disclose or suggest a process step that includes utilizing a model that relates TTA to density or a process step that utilizes the equation of Claim 26 for determining a target density for the green liquor. The Examiner relies on vague statements that the workings of how the computer makes calculations are known and therefore it would be obvious to use the equation recited in Claim 26. However, such statements cannot support an obviousness rejection. If the Examiner's assertion was true, it is a wonder that any additional patents utilizing mathematical equations and computers could ever be obtained.

B. One of Ordinary skill in the art would not be motivated to combine the references

Further, in order to maintain an obviousness rejection there must be some suggestion or motivation to combine the references. In the present case, one of ordinary skill in the art would not be motivated to combine the references for several reasons.

First, the methods described in Musow and Baines are completely different from each other. Baines teaches controlling the amount of lime added to the slaker, whereas Musow teaches maintaining the sodium carbonate concentration at a desired concentration by adjusting the amount of weak wash solution that is added to the dissolving tank. These steps utilize different methods and different chemical reactions for controlling the causticizing reaction, and occur at completely separated points in the Kraft process. As such, one of ordinary skill in the art would not be motivated to select disparate and unrelated elements from Baines to be combined with unconnected elements of Musow.

Further, Baines includes multiple statements that teach away from the combination of Baines and Musow. First, Baines repeatedly emphasizes that using a single characteristic, such Na_2CO_3 concentration, TTA, or density, in controlling the causticization reaction provides less accuracy and therefore is undesirable. For example, Baines states that "a measurement of a single characteristic of the entire white or green liquor, as taught by Bertelsen, can result in error...." See column 2, lines 27-29. From this excerpt, it can be seen that Baines clearly teaches away from the claimed process and the process described in Musow. In contrast to Baines, Musow teaches calculating the concentration of a single component, e.g., utilizing conductivity measurements, to maintain a desired level of sodium carbonate within the green liquor. Baines also states that any "rigid mathematical

formulation that could be developed to correlate the multiple inputs ...would be prohibitively costly to develop and implement, but would also suffer reduced performance." See column 8, lines 4-8. Thus, the teachings of Baines include numerous statements that would teach away from the combination of Baines and Musow.

Musow also teaches away from the claimed invention. Specifically, Musow states that conductivity measurements are superior and more accurate than indirect measurements such as TTA measurements of the green liquor. By teaching that TTA measurements are inferior, Musow teaches away from the use of using TTA measurements of a green liquor for control purposes, and one of skill in the art would not be motivated to combine the conductivity measurements, or even TTA measurements, of Musow with a control system such as the Baines system. Thus, one of ordinary skill in the art would not be motivated to combine Baines and Musow.

In maintaining the rejections, the Examiner has repeatedly ignored the multiple teachings in both Baines and Musow that teach away from the claimed invention and teach away from the combination of Baines and Musow. However, "[it] is improper to combine references where the references teach away from their combination." See MPEP 2146. Therefore, the rejections of the claims based on the combination of Musow and Baines should be withdrawn.

Thus, Claims 1 and 26, and any claims dependent thereon are patentable over the cited references because the references fail to disclose or suggest the claimed invention, and the cited references are not properly combinable.

Conclusion

Based on the above remarks, it is respectfully submitted that all pending claims are patentable over the cited references, whether considered individually or in combination. Withdrawal of the rejection and allowance of all claims as currently presented is respectfully requested.